

Docket No.: 05579-00338-US  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Thomas Bechtold et al.

Application No.: 10/521,917

Confirmation No.: 6177

Filed: January 20, 2005

Art Unit: 1751

For: DYEING WITH SULFUR DYES AND  
SULFUR VAT DYES

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Examiner: Amina S. Khan

**APPEAL BRIEF**

MS Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

1 As required under § 41.37(a), this brief is filed within two months from the date of filing  
2 a Notice of Appeal, filed in this case on November 30, 2007, and is in furtherance of said Notice  
3 of Appeal.

4 The fees required under § 41.20(b)(2) are dealt with in the accompanying  
5 TRANSMITTAL OF APPEAL BRIEF.

6 This brief contains items under the following headings as required by 37 C.F.R. § 41.37  
7 and M.P.E.P. § 1205.2:

- |    |            |   |
|----|------------|---|
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21 I. REAL PARTY IN INTEREST

22 The real party in interest for this appeal is:

23 DyStar Textilfarben GmbH & Co. Deutschland KG

24 II. RELATED APPEALS AND INTERFERENCES

25 There are no other appeals, interferences, or judicial proceedings which will directly  
26 affect or be directly affected by or have a bearing on the Board's decision in this appeal.

1     III.     STATUS OF CLAIMS

2           A.     Total Number of Claims in Application

3           There are 17 claims pending in application.

4           B.     Current Status of Claims

5                 1.     Claims canceled: 0

6                 2.     Claims withdrawn from consideration but not canceled: 0

7                 3.     Claims pending: 1-17

8                 4.     Claims allowed: 0

9                 5.     Claims rejected: 1-17

10          C.     Claims On Appeal

11          The claims on appeal are claims 1-17.

12     IV.     STATUS OF AMENDMENTS

13          Applicant did not file an Amendment After Final Rejection.

14     V.     SUMMARY OF CLAIMED SUBJECT MATTER

15          Claims 1-17 are as follows:

16                 1.     A process for dyeing fiber materials with sulfur dyes by regenerating the dyebath  
17     redox potential, which comprises, during the dyeing process, the dyeing liquor being circulated  
18     between the dyeing apparatus and an attached electrolytic cell and the sulfur dye which has been

1 unwantedly oxidized in the dyebath being cathodically reduced in the electrolytic cell. [See  
2 **English Translation of International Application PCT/EP03/08050,**  
3 **page 4, lines 1-6 of the specification].**

4 2. A process as claimed in claim 1, wherein the dyebath redox potential is closed  
5 loop controlled by the cell current. [See **English Translation of International**  
6 **Application PCT/EP03/08050, page 5, lines 22-26 of the**  
7 **specification].**

8 3. A process as claimed in claim 1, wherein the electrolytic cell is a divided  
9 electrolytic cell. [See **English Translation of International Application**  
10 **PCT/EP03/08050, page 6, lines 10-11 of the specification].**

11 4. A process as claimed in claim 1, wherein the conducting electrolyte is an alkaline  
12 solution. [See **English Translation of International Application**  
13 **PCT/EP03/08050, page 6, line 15 of the specification].**

14 5. A process as claimed in claim 1, wherein the dye concentration in the dyebath is  
15 in the range from 0.5 to 100 g/l of pure dye. [See **English Translation of**  
16 **International Application PCT/EP03/08050, page 5, lines 14-15 of**  
17 **the specification].**

18 6. A process as claimed in claim 1, conducted at a temperature in the range from 20  
19 to 135°C. [See **English Translation of International Application**  
20 **PCT/EP03/08050, page 5, lines 18-19 of the specification].**

21 7. A process as claimed in claim 1, conducted under an inert atmosphere. [See  
22 **English Translation of International Application PCT/EP03/08050,**  
23 **page 6, lines 24-25 of the specification].**

1           8.     A process as claimed in claim 1, wherein the fiber materials are cellulose,  
2 polyamide, cellulose-polyester blend, or cellulose-polyamide blend. **[See English**  
3 **Translation of International Application PCT/EP03/08050, page 7,**  
4 **lines 7-11 of the specification].**

5           9.     A process as claimed in claim 2, wherein the electrolytic cell is a divided  
6 electrolytic cell. **[See English Translation of International Application**  
7 **PCT/EP03/08050, page 6, lines 10-11 of the specification].**

8           10.    A process as claimed in claim 9, wherein the conducting electrolyte is an alkaline  
9 solution of alkali metal salts. **[See English Translation of International**  
10 **Application PCT/EP03/08050, page 6, lines 15-16 of the**  
11 **specification].**

12          11.    A process as claimed in claim 10, wherein the conducting electrolyte is sodium  
13 hydroxide, potassium hydroxide, sodium carbonate, sodium chloride or sodium sulfate. **[See**  
14 **English Translation of International Application PCT/EP03/08050,**  
15 **page 6, lines 15-17 of the specification].**

16          12.    A process as claimed in claim 11, wherein the dye concentration in the dyebath is  
17 in the range from 5 to 50 g/l of pure dye. **[See English Translation of**  
18 **International Application PCT/EP03/08050, page 5, lines 14-16 of**  
19 **the specification].**

20          13.    A process as claimed in claim 12, conducted at a temperature in the range from 60  
21 to 95°C. **[See English Translation of International Application**  
22 **PCT/EP03/08050, page 5, lines 18-20 of the specification].**

1           14. A process as claimed in claim 13, conducted under an inert atmosphere. **[See**  
2 **English Translation of International Application PCT/EP03/08050,**  
3 **page 6, lines 24-25 of the specification].**

4           15. A process as claimed in claim 14, wherein the fiber materials are cellulose,  
5 polyamide, cellulose-polyester blend, or cellulose-polyamide blend. **[See English**  
6 **Translation of International Application PCT/EP03/08050, page 7,**  
7 **lines 7-11 of the specification].**

8           16. A process as claimed in claim 3, wherein the electrolytic cell is a membrane  
9 electrolytic cell. **[See English Translation of International Application**  
10 **PCT/EP03/08050, page 6, lines 10-12 of the specification].**

11           17. A process as claimed in claim 9, wherein the electrolytic cell is a membrane  
12 electrolytic cell. **[See English Translation of International Application**  
13 **PCT/EP03/08050, page 6, lines 10-12 of the specification].**

14  
15 VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

16           1. Whether claims 1-6, 8-12, 16 and 17 are obvious under 35 U.S.C. § 103(a) over  
17 Bechtold et al. (WO 99/11716) ("Bechtold"). Since the WO 99/11716 reference is not in  
18 English, the English equivalent, US 6,312,583, is relied upon for citation purposes.

19           2. Whether claims 6-8 and 13-15 are obvious under 35 U.S.C. § 103(a) over Bechtold  
20 and further in view of Carlough (US 5,873,912) ("Carlough").

1  
2 VII. ARGUMENT3 **Claims 1-6, 8-12, 16 and 17**

4 1. Whether claims 1-6, 8-12, 16 and 17 are obvious under 35 U.S.C. § 103(a) over  
5 Bechtold et al. (WO 99/11716) ("Bechtold"). Since the WO 99/11716 reference is not in  
6 English, the English equivalent, US 6,312,583, is relied upon for citation purposes.

7 Bechtold does not teach dyeing fiber materials with the methods of the present invention.  
8 Bechtold teaches a process for electrochemical reduction of dyes in an alkaline aqueous medium  
9 and also a process for dyeing cellulosic material with vat dyes or sulfur dyes by electrochemical  
10 dye reduction in the presence of metal complexes as mediators (see column 2, lines 44-47 of US  
11 6,814,763, which is the English counterpart and the national stage of WO 01/65000). This  
12 means that the dye, for example the sulfur dye, is reduced by a metal ion of the mediator system.  
13 After that the metal ion is regenerated cathodically and is again available for reducing dye.  
14 Accordingly, this is the prior art process as described on page 3, lines 16-23 of the present  
15 specification. Thus, Bechtold provides a process that completely reduces the dye first and dyes  
16 second. Such dyeing can be performed in the catholyte reservoir of the reduction step.  
17 However, the reduction equipment is not operative during dyeing.

18 Consequently, Bechtold teaches a different subject matter from the subject matter of the  
19 present invention. It is true that the reduced sulfur dye obtained in that process can be used for  
20 dyeing in a subsequent step and said dyeing can even be performed in the catholyte reservoir of  
21 the reduction step. However, no reduction is necessary during dyeing and therefore the  
22 respective equipment is not in use during dyeing. Indeed, the examples provided in Bechtold  
23 illustrate that cathodic reduction takes place to remove oxygen **before** the dye is added to the

1 chamber (see column 5, lines 65-67 through column 6, lines 1-4; column 6, lines 47-53; column  
2 7, lines 31-37; and column 8, lines 13-16 of US 6,814,763). The advantage of the Bechtold  
3 reduction process is that the sulfur dye is reduced to an extent which makes reduction during  
4 dyeing unnecessary. Thus, the teaching of Bechtold starts from a different approach to the  
5 dyeing problem and is unrelated to the technical problems to be solved with the present  
6 invention.

7 A person of ordinary skill in the art would have known that the process for reducing  
8 sulfur dye comprising production of a certain amount of reduction equivalents (as described by  
9 Bechtold) is not comparable with a process which requires maintaining stable conditions for  
10 dyeing. In other words, the Bechtold process cannot be simply modified to arrive at the claimed  
11 dyeing process because Bechtold utilizes a completely different approach to dyeing and in fact  
12 would be ineffective in a dyeing process.

13 **Claims 6-8 and 13-15**

14 2. Whether claims 6-8 and 13-15 are obvious under 35 U.S.C. § 103(a) over Bechtold  
15 and further in view of Carlough (US 5,873,912) (“Carlough”).

16 Carlough teaches an exhaust dyeing process with a sulfur dye which does not involve any  
17 electrochemical means. All reduction is done chemically by non-sulphide reducing agents (see  
18 column 1, lines 59-60 of US 5,873,912). In order to avoid oxidation of reduced sulfur dye, the  
19 process is performed in a closed vessel in an atmosphere of reduced oxygen level (see column 1,  
20 lines 60-61 of US 5,873,912).

21 The goal of the claimed process, however, is to provide stable dyeing conditions without  
22 using chemical reducing agents and without the need to provide an atmosphere of reduced

1 oxygen level. Note that chemical reducing agents are expensive and result in water pollution,  
2 and a closed vessel with a reduced oxygen level requires expensive equipment.

3 Accordingly, a combination of Bechtold and Carlough – assuming arguendo that the  
4 combination is even feasible – does not render the present invention obvious, and this rejection  
5 should be withdrawn.

6  
7 VIII. CLAIMS

8 A copy of the claims involved in the present appeal is attached hereto as Appendix A. As  
9 indicated above, the claims in Appendix A include the amendments filed by Applicant on June  
10 15, 2007.

11 Applicant believes no fee is due with this response. However, if a fee is due, please  
12 charge our Deposit Account No. 03-2775, under Order No. 05579-00338-US from which the  
13 undersigned is authorized to draw.

Dated: January 14, 2008

Respectfully submitted,

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**APPENDIX A- CLAIMS APPENDIX**

**Claims Involved in the Appeal of Application Serial No. 10/057,027**

Claim 1. (Original) A process for dyeing fiber materials with sulfur dyes by regenerating the dyebath redox potential, which comprises, during the dyeing process, the dyeing liquor being circulated between the dyeing apparatus and an attached electrolytic cell and the sulfur dye which has been unwantedly oxidized in the dyebath being cathodically reduced in the electrolytic cell.

Claim 2. (Original) A process as claimed in claim 1, wherein the dyebath redox potential is closed loop controlled by the cell current.

Claim 3. (Previously presented) A process as claimed in claim 1, wherein the electrolytic cell is a divided electrolytic cell.

Claim 4. (Previously presented) A process as claimed in claim 1, wherein the conducting electrolyte is an alkaline solution.

Claim 5. (Previously presented) A process as claimed in claim 1, wherein the dye concentration in the dyebath is in the range from 0.5 to 100 g/l of pure dye.

Claim 6. (Previously presented) A process as claimed in claim 1, conducted at a temperature in the range from 20 to 135°C.

Claim 7. (Previously presented) A process as claimed in claim 1, conducted under an inert atmosphere.

Claim 8. (Previously presented) A process as claimed in claim 1, wherein the fiber materials are cellulose, polyamide, cellulose-polyester blend, or cellulose-polyamide blend.

Claim 9. (Previously presented) A process as claimed in claim 2, wherein the electrolytic cell is a divided electrolytic cell.

Claim 10. (Previously presented) A process as claimed in claim 9, wherein the conducting electrolyte is an alkaline solution of alkali metal salts.

Claim 11. (Previously presented) A process as claimed in claim 10, wherein the conducting electrolyte is sodium hydroxide, potassium hydroxide, sodium carbonate, sodium chloride or sodium sulfate.

1           Claim 12.     (Previously presented) A process as claimed in claim 11, wherein the dye  
2 concentration in the dyebath is in the range from 5 to 50 g/l of pure dye.

3           Claim 13.     (Previously presented) A process as claimed in claim 12, conducted at a  
4 temperature in the range from 60 to 95°C.

5           Claim 14.     (Previously presented) A process as claimed in claim 13, conducted under  
6 an inert atmosphere.

7           Claim 15.     (Previously presented) A process as claimed in claim 14, wherein the fiber  
8 materials are cellulose, polyamide, cellulose-polyester blend, or cellulose-polyamide blend.

9           Claim 16.     (Previously presented) A process as claimed in claim 3, wherein the  
10 electrolytic cell is a membrane electrolytic cell.

11          Claim 17.     (Previously presented) A process as claimed in claim 9, wherein the  
12 electrolytic cell is a membrane electrolytic cell.

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**APPENDIX B - EVIDENCE APPENDIX**

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4 No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the  
5 examiner is being submitted.

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**APPENDIX C - RELATED PROCEEDINGS APPENDIX**

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No related proceedings are referenced in II. above, hence copies of decisions in related  
proceedings are not provided.

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